

Sentry® 100EL Professional Powered Monitor System

- Near-field monitor for post production and live sound
- Wide, uniform coverage
- Extremely smooth frequency response
- High power handling
- High-performance, built-in, 50-watt amplifier for remote operation

SYSTEM SPECIFICATIONS

Frequency Response, 1 Meter on Axis,
Anechoic Environment, Swept One-Third-
Octave Pink Noise ± 3 dB:

45-18,000 Hz

Dispersion Angle Included by 6-dB-Down
Points, 10 Foot Microphone Distance,
Anechoic Environment, One-Third Octave
Bands of Pink Noise,

Horizontal:

250-6,300 Hz ($158^\circ \pm 32^\circ$)

8,000-20,000 Hz ($55^\circ \pm 18^\circ$)

Vertical:

250-6,300 Hz ($140^\circ \pm 40^\circ$)

8,000-20,000 Hz ($52^\circ \pm 13^\circ$)

Crossover Frequency:

2,000 Hz

Sound Pressure Level at 1 Meter,
Maximum Gain, 0 dBu Into Balanced
Input, Anechoic Environment, 300-2,000
Hz Average:

108 dB

Optional Accessory:

SRB-7 rack-mount/wall-mount brackets

Dimensions (see Figure 2),

Height:

43.8 cm (17.25 in.)

Width:

30.5 cm (12.0 in.)

Depth:

29.2 cm (11.5 in.)

Net Weight:

15.0 kg (33 lb)

AMPLIFIER SPECIFICATIONS

Continuous Sine Wave Power (6-ohm
load, 120 V line):

50 watts

Dynamic Range:

92 dB minimum

Residual Noise (maximum gain, 600-ohm
source, 20-20,000 Hz bandwidth):

400 μ V maximum

Power Bandwidth (-3 dB):

30-20,000 Hz

Frequency Response ($\pm 1/2$ dB):

40-20,000 Hz

Total Harmonic Distortion (1,000 Hz, 50
watts):

.05% typical

Low Frequency Filter,

Slope:

12 dB/octave

-3 dB Point:

28 Hz

Balanced Input,

Sensitivity (50 watt output):

.775 V (0 dBu)*

Impedance:

30 kilohms

Maximum Level:

8.0 V (+20 dBu)*

Common Mode Rejection:

40 dB minimum

Connector Type:

3-pin XLR-type female

Polarity (for positive sound pressure):

Pin 2 positive

Unbalanced Input,

Sensitivity (50 watt output):

.39 V (-6 dBu)*

Impedance:

10 kilohms

Maximum Level:

30 V (+32 dBu)*

Connector Type:

1/4-inch phone jack

Polarity (for positive sound pressure):

Tip positive

*Referenced to .775 Volt, RMS.

Power Requirement,

Domestic Model:

120 watts, maximum, 105-130 V 60 Hz

Fuse:

1 1/2 A Slo-Blow, Type 3AG,
MDL or MDX

Export Model:

210-260 V 50/60 Hz

Fuse:

800mA slow acting, Type FTT

DESCRIPTION

The Electro-Voice Sentry® 100EL powered monitor speaker system combines the advantages of the Sentry® 100A monitor with a self-contained, high-performance power amplifier. It is designed with the broadcast/recording studio engineer in mind, although it is well suited for a wide variety of professional applications. The Sentry 100EL offers uniform frequency response and dispersion across a wide range.

A Super-Dome™ tweeter is employed to faithfully reproduce program material at high levels, with response out to 18,000 Hz and uniform dispersion (120° at 5,000 Hz). The low-frequency section is an 8-inch direct radiator woofer installed in an optimally vented enclosure with fourth-order Butterworth tuning.¹ The optimally vented design is responsible for the unusual combination of small size, extended bass response and high efficiency. Such performance is simply not available in other enclosures of similar size.

The Sentry 100EL is housed in a utility cabinet wrapped in a special scratch-resistant, matte black vinyl. The cabinet size is intentionally designed for rack mounting. When coupled with the SRB-7 rack-mount/wall-mount kit, the

1. A.N. Thiele, "Loudspeakers in Vented Boxes: Part 1," J. Audio Engineering Society, Vol. 19, No. 5, pp 386-387 (1971).

SENTRY 100EL SPECIFICATION GRAPHICS

FIGURE 1 — Axial Frequency Response, 2 Volts/3 Feet

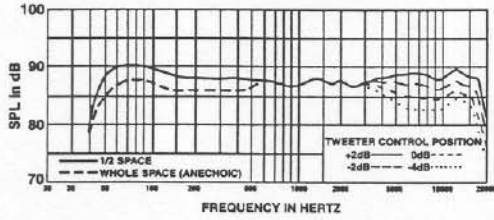


FIGURE 5 — Impedance vs Frequency

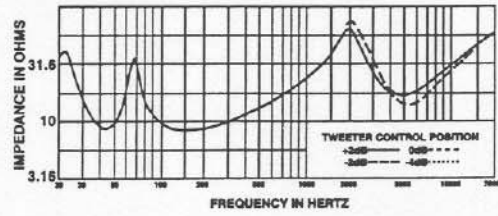


FIGURE 2 — Dimensions

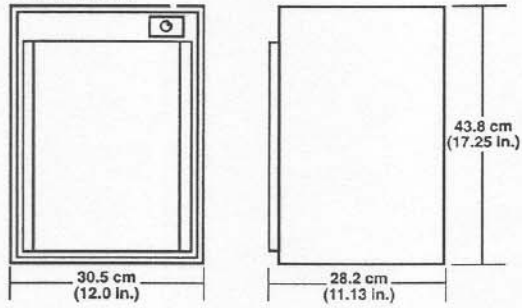


FIGURE 6 — Polar Response

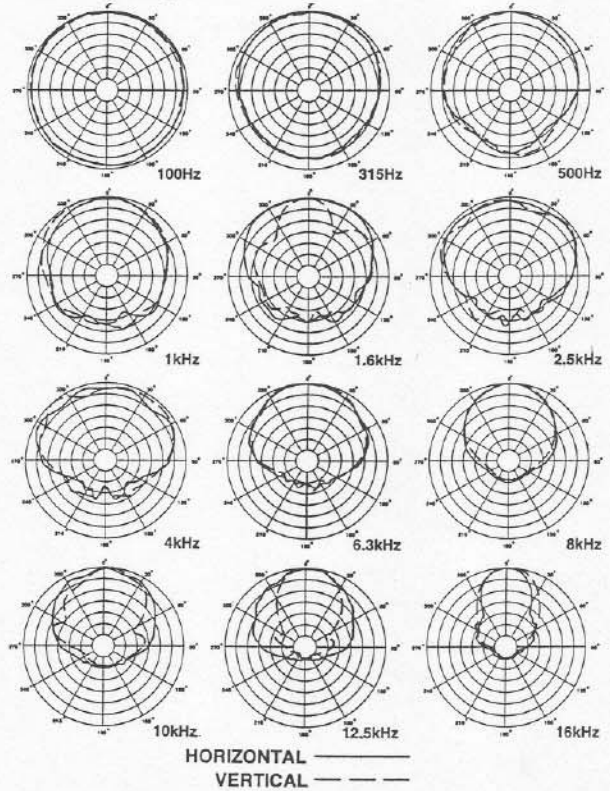


FIGURE 3 — Directivity vs Frequency

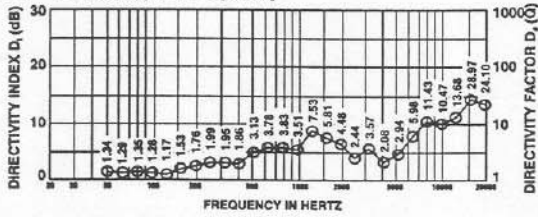
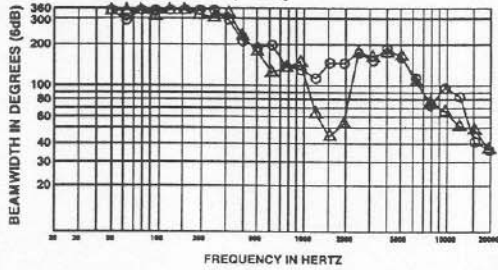


FIGURE 4 — Beamwidth vs Frequency



Sentry 100EL can be integrated into virtually any environment that demands conservation of space such as mobile recording studio facilities. The steel-reinforced grille is covered with a custom gray cloth. This provides maximum protection and a pleasing, aesthetic quality.

AMPLIFIER

A number of advantages are realized by providing, within the enclosure, a power amplifier which is matched to the requirements of the speaker system. No longer must space be provided for a power amplifier mounted externally, or in a rack. By eliminating the metal enclosure from this extra component, additional space is achieved.

The user also is assured that the amplifier is ideally mated to the speaker system. There is no power lost in the resistance of the connecting cable between the amplifier and speaker. This allows electrical damping of the system to remain optimal in all installations, as it is no longer compromised by this resistance. Maximum amplifier power is chosen to optimize acoustic level capability, while minimizing the possibility of speaker damage due to inadvertent signal overload.

Most importantly, a sharp cutoff, high-pass filter is included which has been precisely tailored to the Sentry 100EL response. It provides a dramatic reduction of energy-wasting, sub-sonic signals in the amplifier and woofer. By controlling low-frequency cone excursion and amplifier power, program material may often be reproduced at higher levels without distortion and without any reduction in acoustic low-frequency response.

The Sentry 100EL may be driven from any line-level signal source. An XLR-type connector is provided for use with balanced sources, while a 1/4-inch phone jack accommodates unbalanced lines. Use only the appropriate connector; both should not be connected at the same time. **DO NOT CONNECT EITHER INPUT TO A POWER AMPLIFIER.** Although both inputs are protected against voltage peaks of up to 100 volts, connection from an external power amplifier is redundant and invariably results in increased noise and distortion.

Because the impedance of the inputs is high (bridging), a number of Sentry 100EL systems may be connected to a signal source. For example, up to sixteen may be paralleled across an unbalanced 600-ohm line, or fifty systems across a balanced 600-ohm line. Each system is designed so that a positive-going signal on pin 2 of the XLR-type connector or the tip contact of the phone jack results in an outward movement of the woofer cone.

A system level control is located on the front of the enclosure which varies the gain of the amplifier from zero over a useful range of more than 30 dB. Additionally, a red indicator lamp shows when ac power is applied to the Sentry 100EL. A replaceable ac power fuse is located on the rear panel of the system. The rating and type are identified beside the fuse holder. Under normal conditions, even with momentary overloads, the fuse will not blow. In case of repeated failure, consult a qualified service facility.

LOUDSPEAKER RESPONSE DUE TO THE ACOUSTICAL ENVIRONMENT

Several factors must be considered when determining the overall response of a speaker system in any listening environment. Physical characteristics of the room itself, and placement of speakers and listener can have considerable affect on sound pressure level (SPL) capability, perceived and/or measured frequency response and stereo imaging.

As pointed out in several texts on room acoustics, as the source-listener distance increased, the SPL decreased in the direct field at a steady rate (inverse square law: 6 dB drop for every doubling of distance) until a certain distance is reached. This point is often called the critical distance (D_c). Beyond this point, the SPL approaches a constant value (the reverberation field). The listening position in the sound field determines the amount of acoustic power output of the speaker system needed to produce a certain sound pressure level at the engineer's ears. Generally speaking, the amount of power output needed from the speaker/amplifier system decreases as the room becomes smaller and/or more reverberant (shorter critical distance). In most cases, the audio engineer will be working well within the direct field. If indeed this is the case, the amplifier power requirement is entirely dependent on the loss in SPL due to inverse square law.

The low-frequency response of the overall system can be adversely affected by poor placement of the monitor speakers themselves. The Sentry 100EL was designed for 1/4- to 1/2-space use. This requires that the speaker system be mounted as close as possible to floor or ceiling, and wall surfaces. Placement in loose cavities or resonant mountings can also seriously degrade the overall response.

VENTILATION

The metallic portion of the enclosure back serves as a thermal radiator to maintain the amplifier operating temperature within design limits. It is normal for this panel to become quite warm in use, particularly when the system is operated at high levels for a prolonged period of time. When installing the cabinet, use care to ensure that there is at least one inch of space behind the panel to allow free circulation of air. Maximum temperature rise should not exceed 70° F, with normal operating temperature well below this value.

CROSSOVER NETWORK

The integral crossover network is a 12-dB/octave dual-section type, with crossover occurring at 2,000 Hz. In addition, the Sentry 100EL has a continuously variable, shelf-type high-frequency control which allows adjustment for individual listening preferences, with both boost and cut capability (+2 dB to -4 dB from nominally flat). The high-frequency control is conveniently located on the front panel for easy access.

SRB-7 RACK/WALL MOUNT KIT

One of the fundamental design requirements for the Sentry 100EL provides for the ability to install the system in standard EIA 19 in. racks. The hardware needed for this procedure is available as an optional SRB-7 kit. This same kit provides for flush and angle wall-mounting as well. (Refer to the SRB-7 engineering data sheet for complete details.)

A second nameplate, which can be applied over the original label, has been included for those situations where mounting the Sentry 100EL in an inverted position is preferred (woofer closer to ceiling).

WARNING:

Never mount the Sentry 100EL by the back panel or by only one of the other panels. Failing to comply with this will cause the panel to separate, resulting in the speaker falling. For the safest method of mounting the Sentry 100EL, Electro-Voice strongly suggests using the Model SRB-7 rack/wall mounting kit.

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The loudspeaker system shall consist of a 203-mm (8.0-in.) low-frequency transducer, a 38-mm (1.5-in.) dome tweeter, a passive frequency dividing network and a 50-watt power amplifier installed in an optimally vented enclosure with fourth-order Butterworth tuning.

The loudspeaker system shall have an operating bandwidth of 45 Hz to 18,000 Hz. The sound pressure level shall be 108 dB at maximum gain, with an input signal of 0 dBu into the power amplifier's balanced input, measured at 1 meter on the system's axis.

The frequency dividing network shall be a second-order, dual-section type, with a crossover frequency of 2,000 Hz. A continuously variable, shelving-type high-frequency control shall be provided.

The power amplifier section shall be capable of providing 50 watts continuous sine wave power into a 6-ohm load with 0.05% typical total harmonic distortion at 1,000 Hz. The power bandwidth shall extend from 30 Hz to 20,000 Hz and a low-frequency filter with a slope of 12 dB per octave shall provide a cutoff at 28 Hz. The balanced input shall have a maximum sensitivity of 0.775 volts for 50 watts output, an input impedance of 30 kilohms, and a maximum input level of 8.0 volts. The unbalanced input shall have a maximum sensitivity of 0.39 volts for 50 watts output, an input impedance of 10 kilohms, and a maximum input level of 30 volts.

The loudspeaker enclosure shall be finished in a scratch-resistant, matte black vinyl. Overall dimensions shall be 43.8 cm (17.25 in.) high by 30.5 cm (12.0 in.) wide by 29.2 cm (11.5 in.) deep. The weight shall be 15 kg (33.0 lb). The loudspeaker system shall be the Electro-Voice Sentry® 100EL.

UNIFORM LIMITED WARRANTY

Electro-Voice products are guaranteed against malfunction due to defects in materials or workmanship for a specified period, as noted in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual, beginning with the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product will be returned to the customer prepaid. **Exclusions and Limitations:** The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual; (c) malfunction resulting from use or operation of the product



other than as specified in the product data sheet or owner's manual; (d) malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repairs have been made to the product by anyone other than Electro-Voice or any of its authorized service representatives. **Obtaining Warranty Service:** To obtain warranty service, a customer must deliver the product, prepaid, to Electro-Voice or any of its authorized service representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from Electro-Voice at 600 Cecil Street, Buchanan, MI 49107 (616/695-6831 or 800/234-6831). **Incidental and Consequential Damages Excluded:** Product repair or replacement and return to the customer are the only remedies provided to the

customer. Electro-Voice shall not be liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. **Other Rights:** This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Electro-Voice Speakers and Speaker Systems are guaranteed against malfunction due to defects in materials or workmanship for a period of five (5) years from the date of original purchase. The Limited Warranty does not apply to burned voice coils or malfunctions such as cone and/or coil damage resulting from improperly designed enclosures. Electro-Voice active

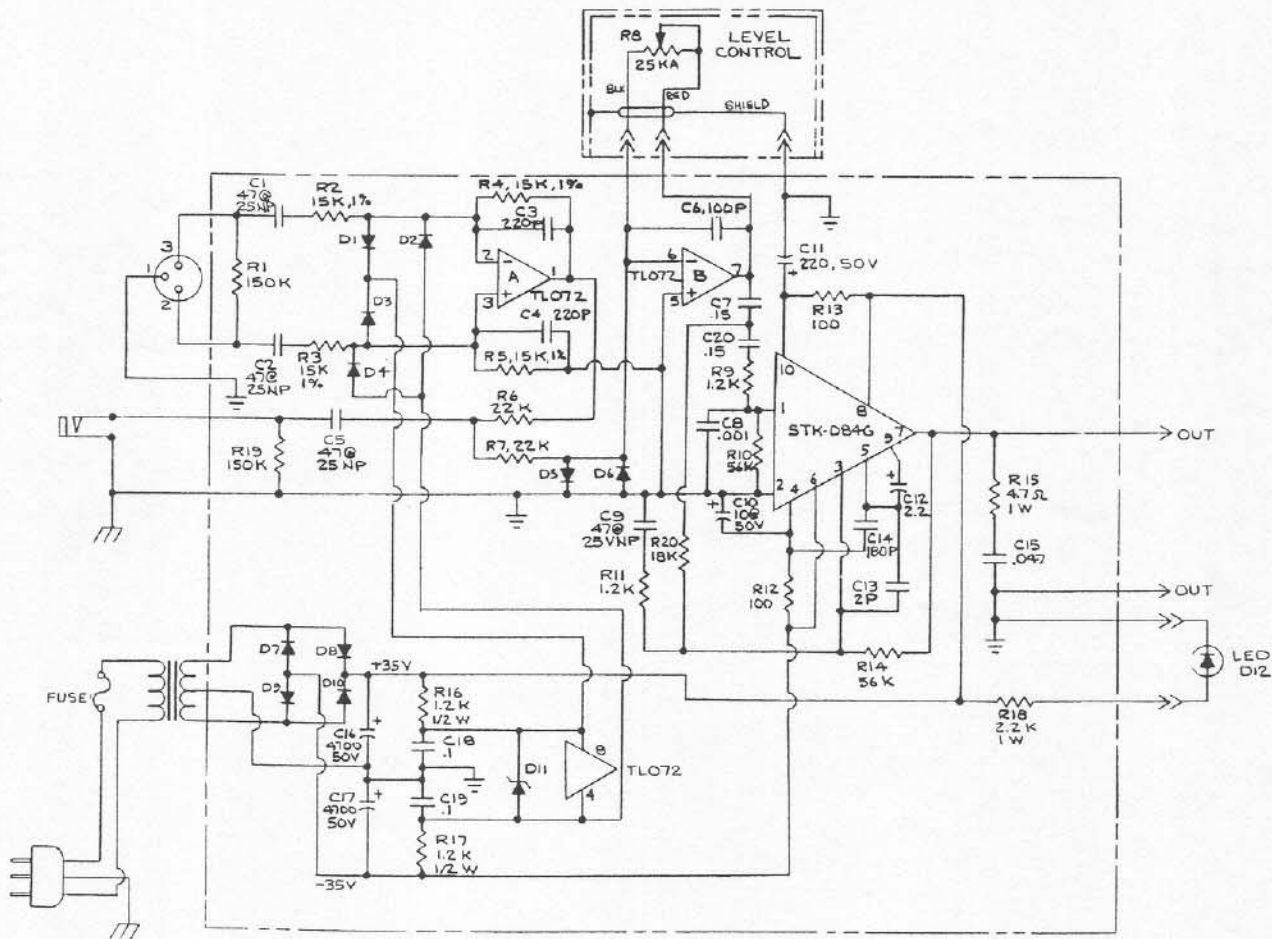
electronics associated with the speaker systems are guaranteed for three (3) years from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

Electro-Voice Electronics are guaranteed against malfunction due to defects in materials or workmanship for a period of three (3) years from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

Service and repair address for this product: Electro-Voice, Inc., 600 Cecil Street, Buchanan, Michigan 49107 (616/695-6831 or 800/234-6831).

Specifications subject to change without notice.

FIGURE 7 — Circuit Schematic



NOTES:

1. ALL RESISTORS 1/4 WATT, 5% TOLERANCE UNLESS OTHERWISE DESIGNATED.
2. CAPACITOR VALUES ARE IN MFD UNLESS OTHERWISE DESIGNATED.
3. DIODES D1 THROUGH D6 ARE IN4447, DIODES D7 THROUGH D10 ARE IN5401.
4. LAST REFERENCE DESIGNATIONS USED: C20, R20.



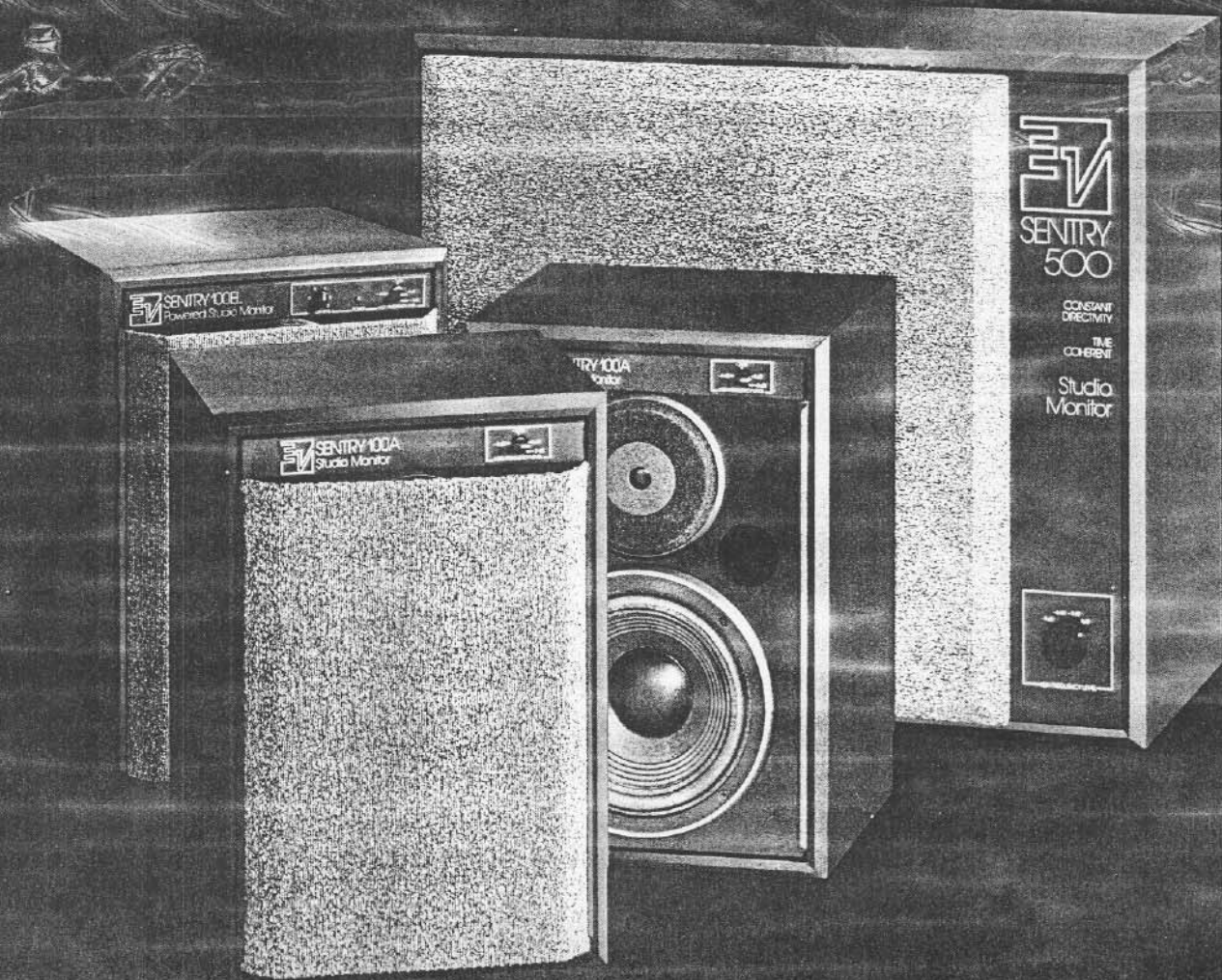
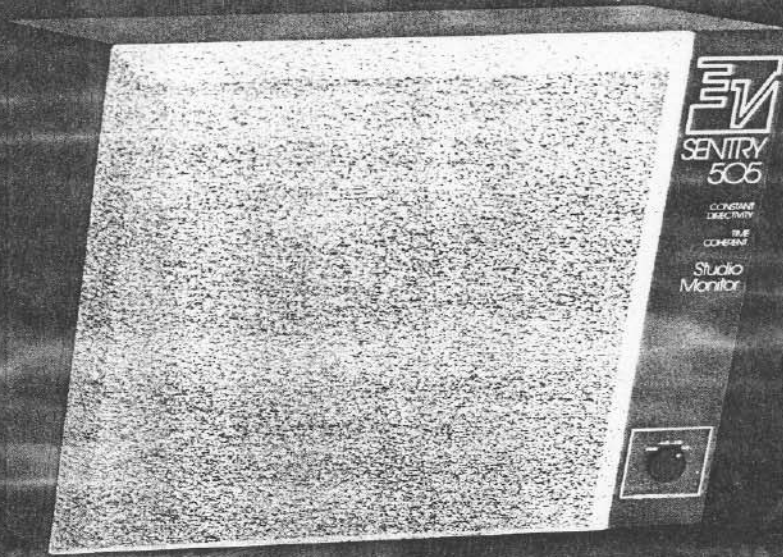
ELECTRO-VOICE a MARK IV company **600 Cecil Street, Buchanan, Michigan 49107**

MANUFACTURING PLANTS AT ■ BUCHANAN, MI ■ NEWPORT, TN ■ SEVIERVILLE, TN ■ OKLAHOMA CITY, OK ■ GANANOQUE, ONT.
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Electro-Voice®

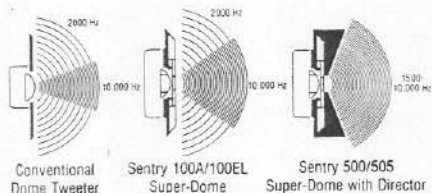
Sentry® Monitor Speaker Systems



An inside look at some of the details that earned Sentry Monitors the right to carry the Electro-Voice label.

Constant Directivity

With conventional tweeters, high frequency dispersion tends to narrow as frequencies get higher. *Constant Directivity* tweeters in Sentry Studio Monitors provide broad, uniform dispersion at all critical frequencies.



The Super-Dome tweeter of the Sentry 100A/100EL features a unique acoustic lens that's acoustically transparent at lower frequencies but becomes acoustically opaque as frequencies increase. A small hole in the lens is positioned directly over the center of the dome causing the radiating area of the tweeter to look small at high frequencies, thus vastly improving high frequency dispersion.

The Super-Dome™ Tweeter



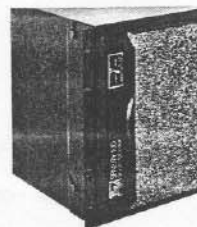
The Electro-Voice *Super-Dome™* represents a breakthrough in audio technology. It provides exceptional dispersion with two-to-four times the efficiency of conventional dome-type tweeters. On the Sentry 500 and Sentry 505 the *Super-Dome* tweeter is coupled with a unique "DIRECTOR" that maintains a 110° dispersion from the 1500 Hz crossover point on up to 10,000 Hz. From 10,000 Hz out to 20,000 Hz the "DIRECTOR" provides an unusually wide 60° dispersion.

The *Super-Dome™* also offers unusually high power handling capability. Its ability to handle up to 25 watts long term power minimizes the chance of tweeter burn-out that could be produced by demanding high-frequency energy or even accidental blasts from tape head contact in rewind/fast-forward mode.

Rack/Wall Mountability

The optional SRB-7 rack/wall mounting bracket allows quick installation of Models 100A and 100EL.

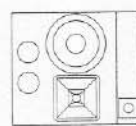
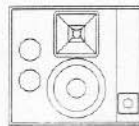
Mounting brackets are included with the Sentry 505, a unit designed specifically for corner mounting.



Front Mounted Controls



The Sentry 100EL powered studio monitor will normally be rack or wall mounted in a restricted environment. The essential controls are all on the front of the cabinet allowing easy amplifier and high frequency adjustment.



| Specifications* Sentry 100A | Sentry 100EL | Sentry 500 | Sentry 505 |
|--|--------------------------------|--------------------------------|--------------------------------|
| Frequency Response, ± 3 dB | 45-18,000 Hz | 45-18,000 Hz | 40-18,000 Hz |
| Dispersion Angle Included by 6 dB Down Points, 250-6,300 Hz: | H V 158° ± 32° x 140° ± 40° | H V 158° ± 32° x 140° ± 40° | H V 110° ± 30° x 110° ± 30° |
| 250-10,000 Hz: | 55° ± 18° x 52° ± 13° | 55° ± 18° x 52° ± 13° | 110° ± 30° x 110° ± 30° |
| 8,000-20,000 Hz: | | | 60° ± 15° x 60° ± 15° |
| 10,000-20,000 Hz: | | | 60° ± 15° x 60° ± 15° |
| Sound Pressure Level at 1 Meter, 1 Watt: 0 dBu into balanced input: | 91 dB | 108 dB | 96 dB |
| Long-term Average Power Handling Capacity: | 30 W | | 100 W |
| Short-term Power Handling Capacity, (10 Milliseconds above 40 Hz): | 300 W | | 400 W |
| Amplifier, Continuous Sine Wave Power: | | 50 W | |
| Damping Factor 40 Hz - 2 kHz: | | 300 minimum | |
| Residual Noise (Maximum Gain, 600-ohm Source, 20 Hz - 20 kHz Bandwidth): | | 400 uV max. | |
| Total Harmonic Distortion (1 kHz, 50 Watts): | | .05% max. | |
| Low Frequency Filter Slope: 3 dB Point: | | 12 dB/octave 28 Hz | |
| Balanced Input, Sensitivity (50 Watt Output): | | .775 V (0 dBu) | |
| Impedance: | | 30K ohms | |
| Connector Type: | | 3-pin XLR-type | |
| Unbalanced Input, Sensitivity (50 Watt Output): | | .39V (-6 dBu) | |
| Impedance: | | 10K ohms | |
| Connector Type: | | 1/4 inch phone jack | |

*These are condensed specifications. Complete specifications are listed on the Engineering Data Sheets available for each model.

Sentry Studio Monitors

One superb standard of audio reproduction because you can't compromise on quality.

A studio monitor is a critical tool that delivers the final test of audio quality. Regardless of the studio environment, Sentry monitors are designed to allow dependable, accurate sound control along with:

- high efficiency
- high power handling
- low distortion
- uniform polar patterns
- consistent linear response

Sentry 100A for tight spaces

Just because your monitor space is limited, you don't have to compromise on sonic accuracy. The Sentry 100A is a compact, no-frills system that's ideal for restricted environments like mobile recording studios. It's the oldest member of the Sentry family and has become the industry standard of reliability.

The Sentry 100A delivers a flat 45-18,000 Hz frequency response with wide 120° dispersion at 5000 Hz. The Super-Dome™ tweeter handles a remarkable 25 watts of input power and is matched with an 8" direct radiator woofer in an optimally vented enclosure.

The Sentry 100A is designed for efficient set up and operation. With the optional SRB-7 rack mount kit, the monitor can be installed from the front of a standard EIA 19" rack. The front mounted high frequency control allows quick and easy boost and cut adjustment.

Sentry 100EL with an integral power amplifier

The Sentry 100EL combines the reproduction components of the Sentry 100A with an integral high-performance 50 watt power amplifier that's perfectly matched to the requirements of the speaker system. In addition to the practical benefits of conserving space and eliminating the need for a separate amplifier, the Sentry 100EL provides a power source ideally mated to the characteristics of the speaker system. There's no power loss from a connecting cable between the amplifier and speaker and the electrical damping of the system remains optimum in all installations. The amplifier power has been calculated to provide optimum acoustic levels while minimizing the possibility of speaker damage due to inadvertent signal overload.

The mated speaker/amplifier system of the Sentry 100EL provides additional versatility: The monitor may be driven from any line-level signal source. The high impedance bridging input design allows a number of systems to be interconnected—up to 16 units may be paralleled across an unbalanced 600-ohm line or 50 units across a balanced 600-ohm line.

Sentry 500 for wider coverage

The Sentry 500 provides virtually uniform coverage over a 100° angle from 250 Hz on up to 10,000 Hz. Even out to 18,000 Hz, the dispersion is still a wide 60°. This *Constant Directivity* feature of the Sentry 500 eliminates "hot spots" or "dead zones" at particular frequencies and allows several sets of ears to check out the identical sound.

The Sentry 500 provides even linear response throughout the complete 40-18,000 Hz range. The acoustic centers of the powerful 12 inch woofer and Super-Dome™ tweeter are aligned to produce minimal phase distortion through the critical mid band crossover area. The low frequency section is a direct radiator woofer with the unusual combination of small size, extended bass response and high efficiency.

The Sentry 500 is designed for 1/4 to 1/2 space mounting. The optional WB-23 wall mount kit allows the Sentry 500 to be corner mounted for most effective placement.

Sentry 505 for "quarter-space" environments

The Sentry 505 is the acoustical equivalent of the Sentry 500 in a 30% smaller housing that's specifically designed for quarter-space placement such as the intersection of a wall and ceiling. The unit can be mounted at either 30° or 60° from vertical using the mounting brackets that are included with the system.

The physical arrangement of the Sentry 505 baffle provides smooth coupling with the adjacent planes of the quarter-space and the on-axis radiation of the system can be angled directly at the listener. The Sentry 505 overcomes disadvantages associated with corner mounting of conventional systems.

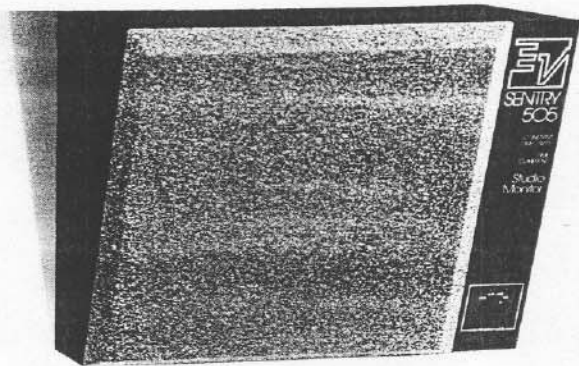
Like the Sentry 500, the acoustic centers of the driver are in relative alignment and provide "Time Coherent" arrival of signal throughout the entire frequency range.

Sentry Studio Monitors

Four different models
because your studio environment is unique.



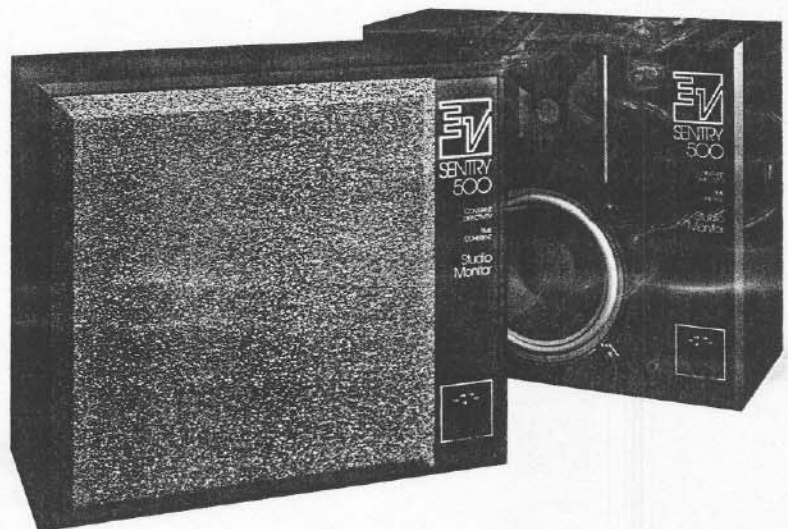
Sentry 100A



Sentry 505



Sentry 100EL



Sentry 500